

Records of *Eudendrium* (Hydrozoa: Hydroida) from New Zealand

JEANETTE E. WATSON

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Three species of *Eudendrium* are recorded from New Zealand, all from the North Island. These are *E. novaezelandiae* Marktanner-Turneretscher, 1890, *E. terranova* Watson, 1985 and *E. ritchei* Millard, 1975. The holotype of *E. novaezelandiae* has been re-examined and the description amplified from study of fresh material. The doubtful record of *E. novaezelandiae* from North Cape by Totton (1930) is now known to be *E. terranova*, while *E. insigne* Hincks, 1861, reported from the east coast (Ralph, 1953), is here referred to *E. ritchei*. This is the first record of the latter species outside South Africa.

Jeanette E. Watson, Honorary Associate, Museum of Victoria, Melbourne, Australia 3000; manuscript received 8 April 1986, accepted for publication 20 May 1987.

INTRODUCTION

Records of the genus *Eudendrium* are comparatively rare in the New Zealand hydroid literature. The earliest record is of *Eudendrium novaezelandiae* Marktanner-Turneretscher, 1890 from Auckland, the holotype of which is lodged in the Naturhistorisches Museum of Vienna. This species was included by Farquhar (1896) in his checklist of New Zealand hydroids. There are no other references to *Eudendrium* in the literature of early authors (e.g. Hutton, 1873; Coughtrey, 1875; 1876; 1876a; Thompson, 1879; Hilgendorf, 1897; Hartlaub, 1901; Bale, 1924; Trebilcock, 1928).

Totton (1930), doubtfully assigned to *E. novaezelandiae* a specimen collected at North Cape by the Terra Nova Expedition (1910-1913). Comparison of the cnidome of Totton's material with that of the holotype (Watson, 1985) showed the North Cape material not to be *E. novaezelandiae* but a new species of *Eudendrium*. This species, named *E. terranova* Watson, 1985, is a common oceanic hydroid of the southeastern Australian coast. The systematics, ecology and distribution of *E. terranova* are fully described by Watson (1985: 189-191).

The remaining reference to *Eudendrium* in the New Zealand literature is a very brief description by Ralph (1953) of a hydroid which she assigned to *E. insigne* Hincks, 1861, from the east coast of New Zealand.

These records are all from the North Island; the genus has not yet been recorded from the South Island. Judging by the number of species of *Eudendrium* now known from comparable latitudes and habitats in Australian waters (Watson, 1985), the New Zealand fauna should, however, include many more species than are known at present.

A small collection of hydroids made by the author, using SCUBA, from the Coromandel Peninsula (37°48'S, 175°30'E) in the North Island in February 1983, yielded two species of *Eudendrium*. One, identified as *Eudendrium novaezelandiae* Marktanner-Turneretscher, 1890, now provides a basis for redescription of that species. The other, referred by Ralph (1953) to *E. insigne* Hincks, 1861, is here identified with *E. ritchei* Millard, 1975. This is the first record of *E. ritchei* outside southern Africa.

Material of each species is lodged in the Museum of Victoria (MVF) and held in the personal collection of the author.

SYSTEMATIC ACCOUNT

Eudendrium novaezelandiae Marktanner-Turneretscher, 1890

Eudendrium novaezelandiae Marktanner-Turneretscher, 1890:201, pl. 3, fig. 21.

non *E. novaezelandiae* Marktanner-Turneretscher. Totton, 1930:141.

Material Examined: Holotype, AN12389, Naturhistorisches Museum of Vienna. Other material, MVF51780, male colony on shell of *Atrina zelandica*, Coromandel, Haurakai Gulf, 8m deep, bottom gravel and mud, coll: J. E. Watson, 20/2/83.

Description: The holotype material comprises an alcohol preserved distal fragment of a larger female colony. The stem is about 6cm in height and is broken into two pieces. The following description of the holotype supplements that of Marktanner-Turneretscher.

The stem is branched irregularly in various planes, the main branches being fascicled almost to their tips, perisarc smooth and shining. The distal branches are roughly alternate, passing upwards at an acute angle, with up to seven indistinct proximal annulations and additional groups of annulations occurring at intervals along the distal branches; hydranth pedicels annulated throughout. There are no remaining hydranths. The gonophores are mature and are borne in groups of up to five scattered along a blastostyle devoid of tentacles. The single egg is enclosed in a thick transparent pellicle.

Nematocysts of three sizes present but poorly preserved; none fully discharged:

- (i) microbasic euryteles (probably from tentacles), capsule $5\text{--}6 \times 2\text{--}3\mu$, abundant in patches in pedicels of hydranths,
- (ii) large microbasic euryteles, capsule bean-shaped, $17 \times 8\mu$, abundant in pedicels of gonophores,
- (iii) microbasic euryteles, smaller than above, $11\text{--}13 \times 5\text{--}6\mu$, capsule bean-shaped. Present in the pedicel of the female gonophore and possibly on the gonophore itself.

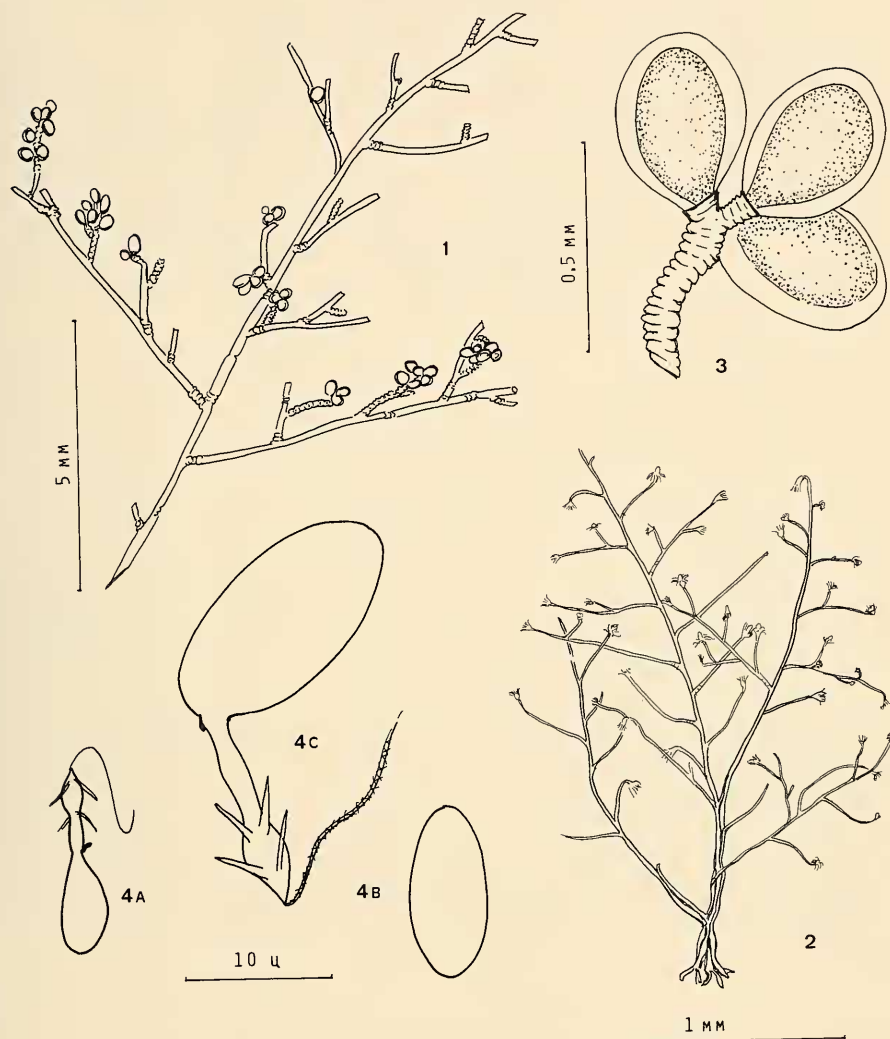
The colony from Coromandel is 30mm in height, comprising two separate stems arising from the same hydrorhizal plexus. Main stems 0.7mm in proximal width, lightly fascicled to about half the height of colony. Branches alternate, proximal width 0.1–0.13mm, rebranching in the same plane with up to eight distinct annulations at origin of branches, perisarc otherwise smooth and shining. Pedicel of hydranth long, distal width 0.13–0.15mm. Hydranth large, with about 20 tentacles, a nematocyst ring on the lower body, hypostome elongate and clavate, maximum width below tentacles (preserved material) 0.3mm. Male gonophores immature, blastostyle without tentacles.

Nematocysts of two sizes present:

- (i) small microbasic euryteles, $6\text{--}7 \times 3\mu$, shaft $5\text{--}6\mu$ long, with a few spines, moderately abundant on tentacles,
- (ii) larger microbasic euryteles, capsule $18\text{--}19 \times 8\text{--}10\mu$, bean-shaped, shaft $11\text{--}15\mu$ long, spines not clearly visible, thread with fine bristles. Abundant in nematocyst ring; a few present on the hypostome and on gonophore.

Colour: Living colony cream coloured, stems dark brown proximally, becoming lighter distally.

Remarks: The main differences between the Coromandel material and the holotype of *E. novaezelandiae* are the flatter and more regular branching, the more regular appearance, and the absence from the cnidome of the third, intermediate-sized microbasic eurytele. The larger and smaller microbasic euryteles agree well with those of the holotype. The absence of the intermediate-sized nematocysts from the present specimen may be due to association with the female gonophore only, in a similar manner to that noted in *E. generale* von Lendenfeld, 1885, by Watson (1985). All other characters agree well with those of the holotype.



Figs 1-4. *Eudendrium novaezelandiae*. 1. — Distal part of branch of holotype colony (AN12389, Naturhistorisches Museum of Vienna) showing clusters of female gonophores. 2. — Whole stem of specimen from the Hauraki Gulf, New Zealand. 3. — Cluster of mature female gonophores drawn from holotype. 4. — Nematocysts: A, tentacular microbasic euryteles from holotype; B, medium-sized, undischarged microbasic eurytele from female gonophore of holotype; C, large microbasic eurytele, discharged, from specimen from the Coromandel Peninsula.

Eudendrium ritchei Millard, 1975

Eudendrium ritchei Millard, 1975:87, fig. 30.

non *E. insigne* Hincks, 1861. Ralph, 1953:63, pl. 1, fig. 2A, 2B.

Material Examined: MVF51781, male colony, MVF51782, female colony; east coast of Coromandel Peninsula, on brown algae, 2m deep, coll: J. E. Watson, 21/2/83. British Museum (Natural History) alcohol preserved specimen 1912.12.21.90 labelled *E. insigne* Hincks, 1861.

Description: Colonies growing luxuriantly on algal holdfast. Stems up to 1cm in height and 0.13-0.18mm in width, unfascicled, irregularly branched, arising from a smooth reticulating hydrorhiza. Stems completely and closely annulated throughout, perisarc very thick. Hydranths terminal on branches, with 20-24 tentacles.

Male and female gonophores borne on different but closely associated colonies on algal substrate. Immature male gonophore with an apical tubercule, mature gonophore 1-2 chambered, distal 5 chamber 0.14-0.2mm in diameter, borne on lower stems of colony in a tight cluster of 20-30 on a blastostyle devoid of tentacles at all stages. Young female gonophore with a strongly bifurcated spadix; gonophores borne in clusters of 4-6 in various stages of development below a hydranth with a reduced number of tentacles. At maturity, the tentacles are completely absent, with 2-5 mature gonophores scattered along the blastostyle. Length of mature female gonophore 0.3mm, width 0.25mm.

Nematocysts of two kinds present:

- (i) microbasic euryteles, capsule $6-7 \times 2.5\mu$, shaft 5μ long, abundant in tentacles, few discharged,
- (ii) larger microbasic euryteles, capsule bean-shaped, $16.5-18 \times 7-8\mu$, shaft thick, at least 37μ long, spinous, the thread very long and covered with bristles. Abundant on hydranth, spadix of female, and on apical tubercule of male gonophore.

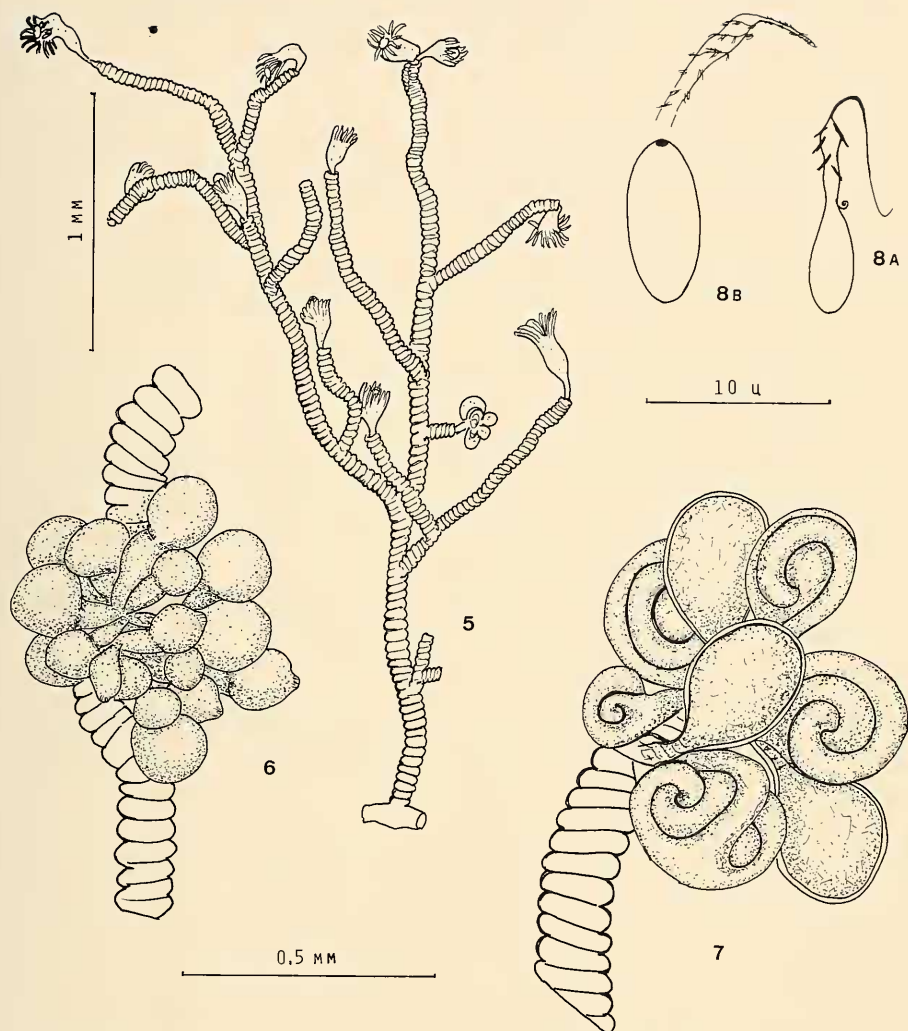
Colour: Hydranths and gonophores cream coloured, perisarc dark shining brown.

Remarks: Although the material upon which Ralph's (1953) identification was based has not been examined, her description, figure and locality notes leave no doubt that specimens collected by the present author on the east coast of the Coromandel Peninsula are identical with those recorded by her as *E. insigne* Hincks, 1861. Comparison of the cnidome of a specimen of fresh material from the Hauraki Gulf with the British Museum material of *E. insigne* shows that Ralph's material is not this species.

The New Zealand specimens collected by the author agree well in colony morphology with Millard's (1975) description of *Eudendrium ritchei*, including important structures such as the bifurcated female spadix and the strongly annulated stems. They differ from the South African species in the smaller size of the mature colony and in having strictly monosiphonic stems. Although the tentacular and supplementary nematocysts (Watson, 1985) of the New Zealand specimens are similar to those described and figured by Millard for *E. ritchei*, there are, however, certain differences, namely the greater length-width (L/W) ratio (Kubota, 1976; Watson, 1985) and the greater ratio of length of shaft to capsule (S/C) in the southern African material. These ratios are compared below:

		New Zealand	S. Africa
Tentacular microbasic euryteles	Capsular L/W ratio	2.8:1	2.7:1
	S/C ratio	0.8:1	0.8:1
Supplementary nematocysts	Capsular L/W ratio	2.3-2.4:1	2.6-2.8:1
	S/C ratio	> 2:1 (not fully discharged)	2.7- 3.2:1

It has been suggested that variations may occur in the relative size and dimensional ratios of nematocysts across the geographical range of a single species of *Eudendrium*



Figs 5-8. *Eudendrium ritchei* from the east coast of Coromandel Peninsula. 5. — Single stem from female colony. 6. — Cluster of mature male gonophores. 7. — Cluster of female gonophores in various stages of maturity. 8. — Nematocysts: A, tentacular microbasic eurytele, discharged; B, microbasic eurytele showing distal end of shaft.

(Kubota, 1976; Watson, 1985). The differences in size between the supplementary nematocysts of the southern African and the New Zealand specimens further support this view. Thus, until the limitations of variability of nematocysts within a species is established, the New Zealand specimens are assigned to *E. ritchei*.

Millard classified the larger (supplementary) nematocysts of *E. ritchei* as macrobasic euryteles. However, according to her definition of nematocysts (Millard, 1975: 21), they should be considered microbasic euryteles since, according to her figure, the shaft is less than four times the length of the capsule. Although no fully discharged shafts were found in the New Zealand material, the S/C ratio would clearly be less than four at full eversion.

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